SECTION 8 - CONTROL OF NOISE CERTIFICATION COMPUTER PROGRAM SOFTWARE AND DOCUMENTATION RELATED TO STATIC-TO-FLIGHT PROJECTION PROCESSES

8.1 GENERAL

8.1.1 Procedures for computer program software control shall be developed, approved by the certificating authority, and maintained and adhered to by each applicant utilising "static-to-flight equivalencies (SFE's)".

8.1.2 The procedures shall consist of four key elements which, when implemented by the noise certification applicant, shall result in documentation which properly describes and validates the applicable SFE noise certification computer program and data output. Throughout the development of a given aeroplane type, adherence to these procedures will enable critical computer programs to be tracked in order to verify that the initial software design has not been changed without substantiation.

8.1.3 The four key elements of configuration index, control procedures, design description and verification process are described below.

8.2 SOFTWARE CONTROL PLAN

8.2.1 **Configuration index**

A configuration index shall be established for each unique SFE software system. It will include all applicable elements of the software system and provide historic tracking of documents and software under control. Where appropriate, the index may be maintained in a general data base.

8.2.2 **Software control plan**

8.2.2.1 A procedure for SFE software change management shall be established that includes the baseline design identification, a software change control system and a method of reviewing and auditing software changes and maintaining a status accounting of changes.

8.2.2.2 Control of software changes shall be maintained by establishing baselines within the verification process (see 8.2.4) and documenting modifications to the baseline case that result from program coding changes. Review and auditing procedures will be established within the verification process that allow the validity of the program coding changes for the "modified" configuration to be assessed relative to the "baseline" configuration.

8.2.2.3 The configuration index shall be updated to reflect, historically, the changes made to the software system.

8.2.3 **Design description**

A technical description of the methods used to accomplish the SFE certification shall be provided; including an overview and a description of the software system design to accomplish the technical requirements. The software design description should include the program structure, usage of subroutines, program flow control and data flow.

8.2.4 **Verification process**

The validation procedure for the SFE software system, or modifications to it, shall include a process to verify that the calculations described in the documentation are being properly performed by the software. The process may include hand calculations compared to computer output, stepwise graphical displays, software audits, diagnostic subroutines that generate output of all relevant

variables associated with the modifications, or other methods to establish confidence in the integrity of the software. The process results shall be monitored and tracked relative to software calculation changes.

8.3 APPLICABILITY

Although the software control plan is applicable to all SFE-specific computer program software and documentation established through the specific procedures and processes of each applicant, it may not be necessary to review and audit ancillary software (such as, but not limited to, subroutines dealing with atmospheric absorption rates, noy calculations, tone corrections) for each main program source code change.